

REMARKS

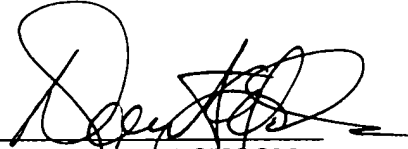
The specification and claims have been amended to add a Sequence Listing (both paper and computer readable copies) and sequence identifiers were appropriate. No new matter is added by this amendment, and the Examiner is respectfully requested to enter it.

It is respectfully submitted that all claims are in condition for allowance. Early action to that end is respectfully requested. The Examiner is hereby invited to contact the undersigned by telephone if there are any questions concerning the amendment or specification,

Respectfully submitted,

DATE:

11/7/2007


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Marked Up Version Showing Changes Made

The paragraph at page 3, lines 9-12:

A second aspect of the invention provides methods for diagnosis of Alzheimer's disease that comprise detecting in a sample of CSF the presence or level of at least one Alzheimer's Disease-Associated Protein Isoform (API), e.g., one or more of the APIs disclosed herein or any combination thereof (SEQ ID NOs:1-458).

The paragraph from page 24, line 27 to page 25, line 2:

The first group comprises of APIs that are decreased in the CSF of subjects having Alzheimer's disease as compared with the CSF of subjects free from Alzheimer's disease. The amino acid sequences of peptides produced from these APIs by proteolysis using trypsin and identified by tandem mass spectrometry and database searching using the SEQUEST program are listed in Table IV (SEQ ID NOs:1-269), in addition to their corresponding pIs and MWs. For one API, the partial sequence information derived from tandem mass spectrometry was not found to be described in any known public database. This API is listed as 'NOVEL' in Table IV, and the partial amino acid sequence information derived from manually interpreting the MS/MS spectrum of tryptic peptides of this API as described in the Example infra, is given in Table IX (SEQ ID NOs:463, 466, 469, 472, 475, 478, 481, 484, 487).

Please substitute Table IV at page 25, line 3 to page 31, line 2, with the amended Table IV submitted in the attached pages entitled "Table IV". Table IV is amended to include sequence identifiers.

The paragraph at page 31, lines 3-8:

The second group comprises APIs that are increased in the CSF of subjects having Alzheimer's disease as compared with the CSF of subjects free from Alzheimer's disease. The amino acid sequences of peptides produced from these APIs by proteolysis using trypsin and identified by tandem mass spectrometry and database searching using the

SEQUEST program are listed in Table V (SEQ ID NOs:270-458), in addition to their corresponding pIs and MWs.

Please substitute Table V at page 31, line 10 to page 36, line 1, with the amended Table V submitted in the attached pages entitled "Table V". Table V is amended to include sequence identifiers.

Please substitute Table VI at page 39, lines 1-40, with the amended Table VI submitted in the attached pages entitled "Table VI". Table VI is amended to include sequence identifiers.

Please substitute Table IX at page 62, line 15 to page 63, line 1, with the amended Table IX submitted in the attached pages entitled "Table IX". Table IX is amended to include sequence identifiers.

In the Claims:

14. (Amended) A preparation comprising an isolated human protein, said protein comprising a tryptic digest peptide having the following partial sequence as determined by mass spectrometry: PGLGM (SEQ ID NO:467).

15. (Amended) A preparation comprising an isolated human protein, said protein comprising a tryptic digest peptide having the following partial sequence as determined by mass spectroscopy: GPLGM (SEQ ID NO:479).

16. (Amended) A preparation comprising an isolated human protein, said protein comprising a tryptic digest peptide having the following partial sequence as determined by mass spectroscopy: PGLGF (SEQ ID NO:470).

17. (Amended) A preparation comprising an isolated human protein, said protein comprising a tryptic digest peptide having the following partial sequence as determined by mass spectroscopy: GPLGF (SEQ ID NO:482).

18. (Amended) A preparation comprising an isolated human protein, said protein comprising a tryptic digest peptide having the following partial sequence as determined by mass spectrometry: PGIGM (SEQ ID NO:473).

19. (Amended) A preparation comprising an isolated human protein, said protein comprising a tryptic digest peptide having the following partial sequence as determined by mass spectroscopy: GPIGM (SEQ ID NO:485).

20. (Amended) A preparation comprising an isolated human protein, said protein comprising a tryptic digest peptide having the following partial sequence as determined by mass spectroscopy: PGIGF (SEQ ID NO:476).

21. (Amended) A preparation comprising an isolated human protein, said protein comprising a tryptic digest peptide having the following partial sequence as determined by mass spectroscopy: GPIGF (SEQ ID NO:488).

23. (Amended) The preparation according to any one of claims 14, 15, 16, 17, 18, 19, 20 or 21, wherein the protein further comprising a tryptic digest peptide having the following partial sequence as determined by mass spectrometry: HQV (SEQ ID NO:464).

24. (Amended) The preparation according to any one of claims 14, 15, 16, 17, 18, 19, 20 or 21, wherein the protein further comprising a tryptic digest peptide having the following partial sequence as determined by mass spectrometry: HQV (SEQ ID

NO:464), wherein the tryptic digest peptide has a mass of 1096.56 Da, and an N-terminal mass of 0 Da, and a C-terminal mass of 733.50 Da, said masses having an error of measurement of 100 parts-per-million or less.

25. (Amended) A preparation comprising an isolated human protein, said protein comprising a tryptic digest peptide having the following partial sequence as determined by mass spectroscopy: HQV (SEQ ID NO:464).

33. (Amended) An isolated nucleic acid molecule that hybridizes under highly stringent conditions or moderately stringent conditions to the following nucleic acid sequence: CCNCCNYTNGGNATG (SEQ ID NO:469).

34. (Amended) An isolated nucleic acid molecule that hybridizes under highly stringent conditions or moderately stringent conditions to the following nucleic acid sequence: GGNCCNYTNGGNATG (SEQ ID NO:481).

35. (Amended) An isolated nucleic acid molecule that hybridizes under highly stringent conditions or moderately stringent conditions to the following nucleic acid sequence: CCNCCNYTNGGNTTY (SEQ ID NO:472).

36. (Amended) An isolated nucleic acid molecule that hybridizes under highly stringent conditions or moderately stringent conditions to the following nucleic acid sequence: GGNCCNYTNGGNTTY (SEQ ID NO:484).

37. (Amended) An isolated nucleic acid molecule that hybridizes under highly stringent conditions or moderately stringent conditions to the following nucleic acid sequence: CCNGGNATHGGNATG (SEQ ID NO:475).

38. (Amended) An isolated nucleic acid molecule that hybridizes under highly stringent conditions or moderately stringent conditions to the following nucleic acid sequence: CCNGGNATHGGNTTY (SEQ ID NO:478).

39. (Amended) An isolated nucleic acid molecule that hybridizes under highly stringent conditions or moderately stringent conditions to the following nucleic acid sequence: GGCCNATHGGNATG (SEQ ID NO:487).

40. (Amended) An isolated nucleic acid molecule that hybridizes under highly stringent conditions or moderately stringent conditions to the following nucleic acid sequence: GGCCNATHGGNTTY (SEQ ID NO:489).

41. (Amended) The isolated nucleic acid molecule according to any one of claims 33, 34, 35, 36, 37, 38, 39, or 40, wherein the nucleic acid also hybridizes under highly stringent conditions or moderately stringent conditions to the following nucleic acid sequence: CAYCARGTN (SEQ ID NO:466).

42. (Amended) An isolated nucleic acid molecule that hybridizes under highly stringent conditions or moderately stringent conditions to the following nucleic acid sequence: CCCGGCCTGGGCATG (SEQ ID NO:468).

43. (Amended) An isolated nucleic acid molecule that hybridizes under highly stringent conditions or moderately stringent conditions to the following nucleic acid

sequence: GGCCCCCTGGGCATG (SEQ ID NO:480).

44. (Amended) An isolated nucleic acid molecule that hybridizes under highly stringent conditions or moderately stringent conditions to the following nucleic acid sequence: CCCGGCCTGGGCTTC (SEQ ID NO:471).

45. (Amended) An isolated nucleic acid molecule that hybridizes under highly stringent conditions or moderately stringent conditions to the following nucleic acid sequence: GGCCCCCTGGGCTTC (SEQ ID NO:483).

46. (Amended) An isolated nucleic acid molecule that hybridizes under highly stringent conditions or moderately stringent conditions to the following nucleic acid sequence: CCCGGCATCGGCATG (SEQ ID NO:474).

47. (Amended) An isolated nucleic acid molecule that hybridizes under highly stringent conditions or moderately stringent conditions to the following nucleic acid sequence: CCCGGCATCGGCTTC (SEQ ID NO:477).

48. (Amended) An isolated nucleic acid molecule that hybridizes under highly stringent conditions or moderately stringent conditions to the following nucleic acid sequence: GGCCCCATCGGCATG (SEQ ID NO:491).

49. (Amended) An isolated nucleic acid molecule that hybridizes under highly stringent conditions or moderately stringent conditions to the following nucleic acid sequence: GGCCCCATCGGCTTC (SEQ ID NO:492).

50. (Amended) The isolated nucleic acid molecule according to any one of claims 42, 43, 44, 45, 46, 47, 48 or 49, wherein the nucleic acid also hybridizes under highly stringent conditions or moderately stringent conditions to the following nucleic acid sequence: CACCAGGTG (SEQ ID NO:465)



Table IV. APIs Decreased in CSF of Subjects Having Alzheimer's disease

AF#	API#	Amino Acid Sequences of Tryptic Digest Peptides	SEQ ID NO:	pI	MW(Da)
AF-1	API-47	EDYICYAR, GKPPPSFSWTR, QPEYAVVQR	1 2 3	4.79	150081
AF-1	API-242	IIMLFDTGGEER, FVVTDDGQTR	4 5	4.79	150081
AF-2	API-1	SGELEQEEER, EEEEEMAVVPQGLFR	6 7	4.28	21349
AF-3	API-48	LVNIYDSMPLR, VIVVWNNIGEK, YLELFQR	8 9 10	8.10	34846
AF-5	API-49	DCSGVSLHLTR	11	7.34	36554
AF-6	API-2	TEAYLEAIR	12	4.91	29812
AF-8	API-194	DGNPFYFTDHR	13	4.93	187927
AF-9	API-3	AETYESGVYQCTAR	14	5.21	136768
AF-10	API-50	FWDYLR, GEVQAMLGQSTEELR KVEQAVETEPEPELR SELEEQLTPVAEETR	15 16 17 18	5.19	17694
AF-10	API-51	VNSDGGGLVALR	19	5.19	17694
AF-13	API-4	HYDGSYSTFGER, VGFYESDVMGR, LPPNVVEESAR	20 21 22	6.01	184530
AF-14	API-52	ADLSGITGAR, EIGELYLPK	23 24	4.72	63166
AF-14	API-243	FEDGVLDPDYPR	25	4.72	63166
AF-15	API-53	ELDESLQVAER	26	4.47	38970
AF-15	API-244	TEVQLEHLR	27	4.47	38970
AF-16	API-54	EGPVLILGR	28	5.19	46876
AF-17	API-5	EPGEFALLR, TALASGGVLDASGDYR, YEAAVPDPR, VAMHLVCPSR	29 30 31 32	5.82	50294
AF-18	API-55	IVIGMDVAASEFYR, LGAEVYHTLK	33 34	4.87	49219
AF-18	API-245	VEQATQAIPMER	35	4.87	49219
AF-21	API-6	LSPYVNYSFR, AETYESGVYQCTAR, GKPPPSFSWTR, IDGDTIIFSNVQER	36 37 38 39	5.40	141094

AF#	API#	Amino Acid Sequences of Tryptic Digest Peptides	SEQ ID NO:	pI	MW(Da)
AF-22	API-56	EGLDLQVLEDSGR, LICSELNGR, RTMRDQDTGK	40 41 42	4.93	133773
AF-22	API-57	YIFHNFMER, SPEQQETVLDGNLIIR, NGIDIYSLTVDSR, ILDDLSPR	43 44 45 46	4.93	133773
AF-23	API-7	IPTTFENGR	47	4.50	32473
AF-23	API-8	EDEEEEEGENYQK, GEAGAPGEEDIQGPTK, HLEEPGETQNAFLNER	48 49 50	4.50	32473
AF-24	API-9	EGPVLILGR, IVQFSPSGK, NNLVIFHR	51 52 53	5.31	46663
AF-25	API-10	ASSIIDELFQDR	54	5.68	36700
AF-26	API-14	TMLLQPAGSLGSSYSYR, APEAQVSVQPNFQQDK	55 56	8.11	32305
AF-27	API-15	WLQGSQELPR	57	5.33	141371
AF-27	API-58	LSPYVNYSFR, AETYEGVYQCTAR, GKPPPSFSWTR, IDGDTIIFSNVQER, NALGAIHHTISVR	58 59 60 61 62	5.33	141371
AF-28	API-16	IALVITDGR	63	5.13	158568
AF-28	API-59	ALYLQYTDETFR, QSEDSTFYLGER, GAYPLSIEPIGVR	64 65 66	5.13	158568
AF-29	API-196	LVGGPMDASVEEEGVR ALDFAVGEYNK	67	9.22	47059
AF-30	API-17	LAAAVSNFGYDLR, TSLEDFYLDEER	68 69	5.67	48057
AF-31	API-60	YIETDPANR, AGALNSNDAFVLK, HVVPNEVVVQR	70 71 72	6.07	91258
AF-32	API-18	EPGEFALLR, TALASGGVLDASGDYR, VAMHLVCPSR	73 74 75	6.17	48958
AF-34	API-61	TGLEAISNHK, FFEECDPNK	76 77	4.54	145408
AF-35	API-62	QQTEWQSGQR, SELEEQLTPVAEETR	78 79	5.21	18623
AF-37	API-19	DVIATDKEDVAFK,	80	6.91	33523

Cont
API

AF#	API#	Amino Acid Sequences of Tryptic Digest Peptides	SEQ ID NO:	pI	MW(Da)
		ENFSCLTR, FVEGLPINDFSR, EVGVYEALK	81 82 83		
AF-38	API-63	LSELIQPLPLER, LVHGGPCDK, EKPGVYTNVCR, YTNWIQK	84 85 86 87	6.47	29535
AF-39	API-64	CSVFYGA PSK	88	7.50	35510
AF-39	API-65	LVNIYDSMPLR, YLELFQR	89 90	7.50	35510
AF-40	API-20	ITWSNPPAQGAR, VGGVQSLGGTGALR, IGADFLAR, NFGLYNER, HIYLLPSGR	91 92 93 94 95	7.29	38617
AF-41	API-22	LEGEACGVYTPR	96	5.85	17345
AF-42	API-66	LIVHNGYCDGR	97	5.04	18662
AF-43	API-67	LGPLVEQGR, LEEQAQQIR	98 99	9.83	14065
AF-43	API-68	LVGGPMDASVEEEGVR	100	9.83	14065
AF-44	API-69	EELLPAQDIK	101	6.63	102328
AF-44	API-70	GCPTEEGCGER, AASGTQNNVLR	102 103	6.63	102328
AF-45	API-23	ALYYDLISSPDHGT YK, ELLDTVTAPQK, LAAAVSNFGYDL YR, TSLEDFYLD EER	104 105 106 107	6.04	46998
AF-46	API-24	THPHFVIPYR	108	4.71	19802
AF-46	API-197	QSLEASLAET EGR, YENEVALR	109 110	4.71	19802
AF-46	API-198	YEELQQTAGR	111	4.71	19802
AF-47	API-25	EPGEFALLR, TALASGGVLDASGDYR, YEAAVPDPR, VAMHLVCPSR	112 113 114 115	5.99	49664
AF-48	API-71	YLELESSGHR, AFLFQESPR	116 117	5.32	122332
AF-49	API-26	GLVSWGNI PCGSK, EKPGVYTNVCR DSCQGDSGGPLVCGDHLR	118 119	6.94	27576
AF-49	API-27	TMLLQPAGSLG SYSYR	120	6.94	27576

AF#	API#	Amino Acid Sequences of Tryptic Digest Peptides	SEQ ID NO:	pI	MW(Da)
AF-50	API-72	NVPLPVIAELPPK	121	6.82	71337
AF-50	API-73	CFEPQLLR, EQPPSLTR	122 123	6.82	71337
AF-50	API-199	YWNDCEPPDSR, DSPVLIDFFEDTER, GGEGTGYFVDFSVR	124 125 126	6.82	71337
AF-50	API-200	VYLFDFPEGK, CISYSSER	127 128	6.82	71337
AF-51	API-28	ASSIIDELFQDR	129	5.70	34388
AF-51	API-30	SADTLWDIQK, LKDDEVAQLK, LIAPVAEEEEATVPNNK	130 131 132	5.70	34388
AF-76	API-86	EGPVLILGR, NNLVIFHR	133 134	5.59	45537
AF-79	API-201	LPPNVVEESAR	135	5.52	142378
AF-81	API-88	LVESGGGLVQPGGSLR	136	5.43	78299
AF-81	API-202	GEASVCVEDWESGDR, VSSQNIQDFPSVLR	137 138	5.43	78299
AF-82	API-89	LLEACTFHSAK, HSTVLENLPDK	139 140	6.69	74838
AF-83	API-90	DQYELLCR, QMDFELLQNGAR, IECVSAENTEDCIAK, SPDFQLFSSSHGK, GSNFQWNQLQGK, CGLVPVLAENYK, WCTISNQEANK, FDQFFGEGCAPGSQR, EPVDNAENCHLAR, WCAIGHEETQK, HSTVLENLPDK	141 142 143 144 145 146 147 148 149 150 151	6.81	71920
AF-84	API-91	DNPQTHYYAVAVVK, DQYELLCR, QMDFELLQNGAR, VTCVAEELLK, WCTISNQEANK, EPVDNAENCHLAR, FDQFFGEGCAPGSQR, HSTVLENLPDK	152 153 154 155 156 157 158 159	6.94	73402
AF-85	API-92	IPIEDGSGEVVLSR	160	7.10	73878
AF-85	API-93	DQYELLCR, FDQFFGEGCAPGSQR,	161 162	7.10	73878

Cont
M

AF#	API#	Amino Acid Sequences of Tryptic Digest Peptides	SEQ ID NO:	pI	MW(Da)
		SPDFQLFSSSHGK, EPVDNAENCHLAR, CGLVPVLAENYK, HSTVLENLPDK	163 164 165 166		
AF-87	API-95	ECCHGDLLECADDR, IYEATLEDCCAK, LGEYGFQNALIVR, DVFLGTFLYEYSR, FQPLVDEPK	167 168 169 170 171	5.95	64179
AF-89	API-97	GYTQQLAFR, AGDFLEANMYMNLQR	172 173	5.39	65155
AF-90	API-98	LPLEYSYGEYR	174	7.61	62945
AF-91	API-99	LFEELVR, DPVQEAWAEDVDLR, GIFPVLCK, GDYPLEAVR	175 176 177 178	8.16	56352
AF-100	API-101	LSCAEDYLSLVLR, LGEYGFQNALIVR, YICENQDTISTK, CCTESLVNR, DVFLGTFLYEYSR, HPDYSVSLLR	179 180 181 182 183 184	6.08	44068
AF-103	API-102	INHGILYDEEK, EIMENYNIALR, ITCTEEGWSPTPK	185 186 187	5.93	42722
AF-104	API-103	YVMLPVADQEK	188	5.09	42184
AF-105	API-104	GSPAINVAVHVFR	189	5.19	42184
AF-107	API-107	ITVVDALHEIPVK, DNLAIQTR	190 191	7.26	33226
AF-107	API-210	KLVVENVDVLTQMR	192	7.26	33226
AF-108	API-108	GYCAPGMECVK, GTCEQGPSIVTPPK, AGAAAGGPGVSGVCVK	193 194 195	7.54	33136
AF-114	API-111 API-112	See Table IX		6.80	18741
AF-117	API-113	KVEQAVETEPEPELR, SELEEQLTPVAETR	196 197	4.65	13983
AF-119	API-114	GTFATLSELHCDK, VVAGVANALAHK, LLVVYPWTQR	198 199 200	7.23	11699
AF-149	API-214	VEEVKPLEGR	201	4.82	190721
AF-150	API-144	GPPGPPGGVVVR,	202	6.87	157592

1
AF-146

AF#	API#	Amino Acid Sequences of Tryptic Digest Peptides	SEQ ID NO:	pI	MW(Da)
		VEVLAGDLR	203		
AF-152	API-146	FTFEYSR, FTDSENVQER	204 205	5.04	81703
AF-152	API-147	VIALINDQR	206	5.04	81703
AF-152	API-148	TATSEYQTFFNPR, ELLESYIDGR	207 208	5.04	81703
AF-154	API-150	QEDDLANINQWVK, LCQDLGPGAFR	209 210	5.03	67307
AF-154	API-151	DVVLTTTFVDDIK, AIEDYINEFSVR	211 212	5.03	67307
AF-154	API-152	WLQGSQELPR	213	5.03	67307
AF-155	API-215	LVGGPMDASVEEEGVR, ALDFAVGEYNK	214 215	9.21	64021
AF-156	API-153	DQDGEILLPR	216	4.36	58083
AF-159	API-158	TSLEDFYLDEER	217	5.08	52008
AF-159	API-159	EPGEFALLR, TALASGGVLDASGDYR	218 219	5.08	52008
AF-159	API-160	YYTVFDR, QVFGAATK	220 221	5.08	52008
AF-163	API-165	IPTTFENGR, CPNPPVQENFDVNK, NILTSNNIDVK, NPNLPPETVDSLK	222 223 224 225	4.45	34879
AF-163	API-166	GEAGAPGEEDIQGPTK	226	4.45	34879
AF-164	API-167	ELDESLQVAER, FMETVAEK, EILSVDCSTNNPSQAK	227 228 229	5.00	33485
AF-169	API-173	LGQYASPTAK, GSFEFPVGDAVSK, EELVYELNPLDHR	230 231 232	8.00	34362
AF-170	API-174	ELDESLQVAER	233	5.41	31886
AF-170	API-175	GSPAINVAVHVFR, AADDTWEPFASGK	234 235	5.41	31886
AF-170	API-176	SWFEPLVEDMQR, LGADMEDVCGR, LEEQAQQIR, SELEEQLTPVAEETR, AATVGSLAGQPLQER	236 237 238 239 240	5.41	31886
AF-172	API-179	GPCWCVDR, HLDSVLQQLQTEVYR	241 242	6.71	28747
AF-172	API-180	KPNLQVFLGK,	243	6.71	28747

Colt
#4

AF#	API#	Amino Acid Sequences of Tryptic Digest Peptides	SEQ ID NO:	pI	MW(Da)
		GLVSWGNI PCGSK, EKPGVYTNVCR, DSCQGDSGGPLVCGDHLR	244 245 246		
AF-173	API-181	SNLDEDI AEENIVSR, NEQVEIR	247 248	7.67	27476
AF-174	API-182	SVTEQGAELSNEER	249	4.67	27811
AF-175	API-183	APEAQVSVQPNFQQDK, TMLLQPAGSLGSSYSYR, AQGFTEDTIVFLPQTDK	250 251 252	5.33	24936
AF-176	API-184	TMLLQPAGSLGSSYSYR, AQGFTEDTIVFLPQTDK	253 254	4.86	22248
AF-178	API-185	LPFVINDGK	255	6.03	22247
AF-178	API-217	TMLLQPAGSLGSSYSYR, AQGFTEDTIVFLPQTDK, APEAQVSVQPNFQQDK	256 257 258	6.03	22247
AF-178	API-219	TQGFTEDAIVFLPQTDK	259	6.03	22247
AF-181	API-187	HVGDLGNVTADK, GDGPVQGIINFEQK	260 261	5.72	16336
AF-183	API-189	LVGGPMDASVEEEGVR, ALDFAVGEYNK	262 263	10.36	11160
AF-184	API-190	ELLDTVTAPQK, TSLEDFYLDEER	264 265	5.31	48769
AF-186	API-238	IPTTFENGR	266	4.71	29693
AF-187	API-239	QPEYAVVQR	267	4.93	154156
AF-190	API-240	ELDVLQGR, NNYMYAR	268,269	5.29	29663

Table V. APIs Increased In CSF of Subjects Having Alzheimer's Disease

AF#	API#	Amino Acid Sequences of Tryptic Digest Peptides	SEQ ID NO:	pI	MW (Da)
AF-52	API-74	GLQDEDGYR, FACYYP	270 271	6.30	32573
AF-53	API-33	AVMDDFAAFVEK, YICENQDSISSK	272 273	5.84	45302
AF-54	API-221	SELEEQLTPVAEETR	274	5.12	17520
AF-55	API-34	LVGGPMDASVEEEGVR, ALDFAVGEYNK	275 276	8.10	12361
AF-56	API-75	NYCGLPGEYWLGNLK, IRPFFPQQ, LESDVSAQMEYCR, DNDGWLTSDPR	277 278 279 280	8.56	52128
AF-56	API-246	AGALNSNDAFVLK, TGAQELLR	281 282	8.56	52128
AF-57	API-35	MTLDDFR	283	6.30	68549
AF-57	API-76	VFLDCCNYITELR	284	6.30	68549
AF-57	API-222	QSLEASLAETGR	285	6.30	68549
AF-58	API-77	KVEQAVETEPEPELR	286	5.01	14507
AF-59	API-36	TSLEDFYLDEER	287	6.74	33401
AF-60	API-37	GEVQAMLGQSTEELR, KVEQAVETEPEPELR, SELEEQLTPVAEETR,	288 289 290	5.39	33873
AF-61	API-78	QELSEAEQATR, TIYTPGSTVLRY, IPIEDGSGEVLSR	291 292 293	6.76	54345
AF-62	API-38	GLQDEDGYR, ITQVLHFTK, FACYYP	294 295 296	6.60	31004
AF-63	API-79	IWDVVEK, QPVPGQQMTLK, EVVADSVWVDVK, DSCVGSLLVK	297 298 299 300	5.97	14897
AF-64	API-80	DFDFVPPVVR, SNLDEDIAEENIVSR, IPIEDGSGEVLSR	301 302 303	6.67	68119
AF-65	API-81	CLVNLIEK, FLCTGGVSPYADPNTCR	304 305	7.19	58620
AF-65	API-223	VGDTLNLLNR	306	7.19	58620
AF-66	API-82	VFLDCCNYITELR, FISLGEACK	307 308	10.05	30092
AF-66	API-83	LVGGPMDASVEEEGVR,	309	10.05	30092

AF#	API#	Amino Acid Sequences of Trypic Digest Peptides	SEQ ID NO:	pI	MW (Da)
		ALDFAVGEYNK	310		
AF-67	API-39	AADDTWEPFASGK	311	5.02	13735
AF-68	API-84	LISWYDNEFGYSNR, VPTANVSVDLTCR,	312 313	9.06	35351
AF-68	API-85	ISYQSSSTEER	314	9.06	35351
AF-69	API-40	TQVNTQAEQLR, ALVQQMEQLR	315 316	5.01	46760
AF-69	API-247	VLSLAQEQVGGSPEK, AEMADQAAAWLTR, QGSFQGGFR	317 318 319	5.01	46760
AF-70	API-41	LVMGIPTFGR, EGDGSCFPDALDR, FSNTDYAVGYMLR, GNQWVGYYDDQESVK, QHFTTLIK	320 321 322 323 324	8.91	38789
AF-70	API-224	DAIPEDLPPLTADFAEDK, YLYEIAR	325 326	8.91	38789
AF-71	API-42	VFLDCCNYITELR, SNLDEDIIAEENIVSR, GYTQQLAFR	327 328 329	6.44	68579
AF-72	API-43	IDQTVEELR, TQVNTQAEQLR, ALVQQMEQLR, LEPYADQLR	330 331 332 333	5.00	43788
AF-73	API-44	AADDTWEPFASGK	334	5.21	31615
AF-74	API-45	GECQAEGVLFFQGDR, YYCFQGNQFLR	335 336	6.19	51934
AF-74	API-248	TIYTPGSTVLYR, TVMVNIENPEGIPVK	337 338	6.19	51934
AF-75	API-46	ELDESLQVAER, EILSVDCSTNNPSQAK	339 340	5.03	33671
AF-75	API-225	LGPLVEQGR, AATVGSLAGQPLQER	341 342	5.03	33671
AF-121	API-116	DNCCILDER, YEASILTHDSSIR, TSTADYAMFK, VAQLEAQCQEPCK, VELEDWNGR, YLQEIYNSNNQK, RLDGSVDFK,	343 344 345 346 347 348 349	5.42	105108

AF#	API#	Amino Acid Sequences of Tryptic Digest Peptides	SEQ ID NO:	pI	MW (Da)
AF-123	API-118	GLIDEVNQDFTNR, ADSGEGDFLAEGGGVR	350 351	7.31	64933
AF-124	API-119	GLIDEVNQDFTNR, ESSSHHPGIAEFPSR	352 353	7.47	64736
AF-125	API-120	SGNENGEFYLR	354	4.77	61297
AF-126	API-121	DQDGEILLPR, DCQPGLCCAFQR	355 356	4.11	60374
AF-126	API-122	DQDGEILLPR	357	4.11	60374
AF-127	API-123	SLDFTELDVAEEK, ALQDQLVLVAAK	358 359	4.98	59649
AF-128	API-124	LNMGITDLQGLR, VGDTLNLNLR	360 361	6.60	57865
AF-129	API-125	KLCMAALK, ELPEHTVK, THLPEVFLSK, HLSLLTTLSNR, FEDCCQEK, LPEATPTELAK, VCSQYAAAYGEK, YTFELSR, LCDNLSTK	362 363 364 365 366 367 368 369 370	5.29	54625
AF-129	API-126	SLDFTELDVAEEK, DPTFIPAPIQAK	371 372	5.29	54625
AF-130	API-127	LQSLFDSPDFSK, LAAAVSNFGYDLYR, TSLEDFYLDEER	373 374 375	5.08	51880
AF-130	API-128	EPGEFALLR, TALASGGVLDASGDYR, VAMHLVCPSR	376 377 378	5.08	51880
AF-132	API-130	DHAVDLIQK, TEQWSTLPPETK, VLSLAQEQVGGSPK, QGSFQGGFR, ADGSYAAWLSR, AEMADQASAWLTR	379 380 381 382 383 384	4.72	47414
AF-133	API-131	TQVNTQAEQLR, LEPYADQLR	385 333	5.12	44068
AF-134	API-132	LEPYADQLR	333	5.00	43516
AF-137	API-134	ELDESLQVAER, KYNELLK	386 387	4.98	36855
AF-137	API-135	AQLGDLPWQVAIK, VFSLQWGEVK	388 389	4.98	36855

AF#	API#	Amino Acid Sequences of Trypic Digest Peptides	SEQ ID NO:	pI	MW (Da)
AF-137	API-232	LGPIEAIQK	390	4.98	36855
AF-137	API-233	LGPLVEQGR, LEEQAQQIR	391 392	4.98	36855
AF-137	API-234	KMEENEK	393	4.98	36855
AF-139	API-136	ELDESLQVAER, IDSLLENDR, EDALNETRESETKLK, EILSVDCSTNNPSQAK, TLLSNLEEAK	394 395 396 397 398	5.00	34295
AF-139	API-137	SELEEQLTPVAEETR, AATVGSLAGQPLQER	399 400	5.00	34295
AF-140	API-138	GLQDEDDGYR, FACYYP	401 402	6.80	32080
AF-141	API-139	LLEVPEGR, TNFDNDIALVR	403 404	7.50	28440
AF-142	API-140	SNLDEDIIEENIVSR, VELLHNPAFCSLATTK	405 406	6.75	27279
AF-142	API-141	LSELIQPLPLER,	407	6.75	27279
AF-143	API-142	LLIYWASTR, SGTASVVCLLNNFYPR,	408 409	7.44	26066
AF-144	API-143	EVDSGNDIYGNPIK, SDGSCAWYR	410 411	6.56	20744
AF-151	API-145	AETYEGVYQCTAR, GKPPPSFSWTR, IDGDTIIFSNVQER	412 413 414	5.28	137531
AF-153	API-149	LNMGITDLQGLR, VGDTLNLNLR	415 416	9.85	69630
AF-157	API-155	EPGEFALLR, TALASGGVLDASGDYR, YEAAVPDPR	417 418 419	4.99	55449
AF-161	API-161	IDQTVEELR, TQVNTQAEQLR, SLAPYAQDTQEK, ALVQQMEQLR, LEPYADQLR, RVEPYGENFNK	420 421 422 423 424 425	5.18	44404
AF-161	API-162	TSLEDFYLDEER	426	5.18	44404
AF-161	API-163	AVFPSIVGR, SYELPDGQVITIGNER, AGFAGDDAPR, GYSFTTTAER, QEYDESGPSIVHR,	427 428 429 430 431	5.18	44404

AF#	API#	Amino Acid Sequences of Trypic Digest Peptides	SEQ ID NO:	pI	MW (Da)
		VAPEEHPVLLTEAPLNPK	432		
AF-165	API-168	EELVYELNPLDHR, EPFLSCCQFAESLR	433 434	7.17	34230
AF-166	API-169	GLCVATPVQLR, EELVYELNPLDHR	435 436	8.54	33657
AF-167	API-170	ASSIIDELFQDR, TLLSNLEEK	437 438	5.69	33621
AF-167	API-171	GEVQAMLGQSTEELRLEEQ AQQIR, SELEEQLTPVAEETR	439 440	5.69	33621
AF-168	API-237	ALEESNYELEGK	441	7.66	33920
AF-168	API-172	GSFEFPVGDAVSK, GLCVATPVQLR, EELVYELNPLDHR, EPFLSCCQFAESLR	442 443 444 445	7.66	33920
AF-171	API-177	TMLLQPAGSLGSYSYR, AQGFTEDTIVFLPQTDK	446 447	4.98	29658
AF-171	API-178	GSPAINVAVHVFR, AADDTWEPFASGK	448 449	4.98	29658
AF-179	API-186	LIVHNGYCDGR, QEELCLAR, FSGTWYAMAK	450 451 452	5.26	20115
AF-180	API-220	CSVFYGAPSK, GLQDEDGYR	453 454	6.17	16255
AF-182	API-188	AADDTWEPFASGK	455	4.89	13651
AF-185	API-191	VGYVSGWGR	456	5.32	40323
AF-185	API-192	SGNENGEFYLR, ADQVCINLR	457 458	5.32	40323

Table VI

ERPI#	ERF#	Amino Acid Sequences of Tryptic Digest Peptides	SEQ ID NO:
ERPI-1	ERF-2	ELLDTVTAPQK, LAAAVSNFGYDLYR, TSLEDFYLDEER, ALYYDLISSPDIHGTYK	459 460 461 462

Table IX. Amino Acid Sequences and Probes for APIs

AF#	API#	Amino Acid Sequences of Tryptic Digest Peptides as Determined by Mass Spectrometry				Preferred Probes (SEQ ID NO)	Degenerate Probes (SEQ ID NO)
		Mass of singly protonated peptide (Da)*	Partial sequence (SEQ ID NO)	N-terminal Mass (Da)*	C-terminal Mass (Da)*		
AF-114	API-111	1097.57	HQV (463)	0	733.50	CACCAGGT G (464)	CAYCARGT N (465)
AF-114	API-112	1547.74	PGLGM (466)	0	1076.63	CCCGGCCT GGGCATG (467)	CCNGGNYT NGGNATG (468)
AF-114	API-112	1547.74	PGLGF (469)	0	1076.63	CCCGGCCT GGGCTTC (470)	CCNGGNYT NGGNNTTY (471)
AF-114	API-112	1547.74	PGIGM (472)	0	1076.63	CCCGGCAT CGGCATG (473)	CCNGGNAT HGGNATG (474)
AF-114	API-112	1547.74	PGIGF (475)	0	1076.63	CCCGGCAT CGGCTTC (476)	CCNGGNAT HGGNNTTY (477)
AF-114	API-112	1547.74	GPLGM (478)	0	1076.63	GGCCCCCT GGGCATG (479)	GGNCCNYT NGGNATG (480)
AF-114	API-112	1547.74	GPLGF (481)	0	1076.63	GGCCCCCT GGGCTTC (482)	GGNCCNYT NGGNNTTY (483)
AF-114	API-112	1547.74	GPIGM (484)	0	1076.63	GGCCCCAT CGGCATG (485)	GGNCCNAT HGGNATG (486)
AF-114	API-112	1547.74	GPIGF (487)	0	1076.63	GGCCCCAT CGGCTTC (488)	GGNCCNAT HGGNNTTY (489)

*The masses determined by mass spectrometry have an error of mass measurement of 100 parts-per-million (ppm) or less. For a given measured mass, M, having an error of mass measurement of z ppm, the error of mass measurement can be calculated as $(M \times z \div 1000000)$.